

EVALUATION OF SOUTHERN PINE BEETLE INFESTATIONS  
ON THE KISATCHIE NATIONAL FOREST, LOUISIANA

by

James D. Smith<sup>1/</sup>

INTRODUCTION

Since the late 1960's, the southern pine beetle has been a problem in most pine tree producing areas of Louisiana, including the Kisatchie National Forest. Since that time, populations have periodically fluctuated between endemic and epidemic status.

During July and September 1977, an evaluation was conducted on each district of the Kisatchie National Forest. Ground checking was conducted by personnel of the Forest Insect and Disease Management Group to determine the current status of the SPB population.

METHODS

Each district flew presuppression flights (FY 77 project) prior to ground checking. Standard aerial sketch-map procedures were used for the evaluation.<sup>2/</sup> Aerial coverage was 100 percent. The spots detected from the air on each district are indicated in Table 1.

RESULTS AND DISCUSSION

Results of this evaluation are summarized in Table 1. There were 231 spots containing 721 trees scattered within the boundaries of the Kisatchie National Forest. The volume infested was 88.40 MBF, and the total affected volume was 152.50 MBF.

The Caney District - This district had only two spots on the pre-suppression flight made in July (see Fig. 1 for district location and level of SPB activity). These spots were salvaged at the time of ground checking, so there were no active spots to evaluate.

---

<sup>1/</sup> Entomologist, USFS, Southeastern Area, State and Private Forestry, Forest Insect and Disease Management Group, Pineville, LA 71360.

<sup>2/</sup> Detection of Forest Pests in the Southeast, 1970. USDA, USFS, SA, S&PF, Div. of FPM, Publ. S&PF 7, Atlanta, GA. 51 p.

Table 1. Summary of the results of southern pine beetle evaluations conducted on the Caney, Catahoula, Evangeline, Kisatchie, Vernon, and Winn Ranger Districts, Kisatchie N.F., July through September 1977

	Ownership Unit (Districts)						Total
	Caney	Catahoula	Evangeline	Kisatchie	Vernon	Winn	
1. Results compiled from data collected during the aerial phase of the evaluation:							
Survey type . . . . .			Aerial Sketch Map				
Date of aerial survey . . . . .	July 1977	July 1977	July 1977	July 1977	July 1977	Sept. 1977	
Percent survey . . . . .	100%	100%	100%	100%	100%	100%	
Total acreage surveyed . . . . .	60,093	185,897	193,898	175,639	App.55,000	290,955	
Total acreage of Forest Service land . . . . .	60,093	185,897	193,898	175,639	App.55,000	290,955	
Susceptible host type acreage of Forest Service land . . . . .	37,553	153,591	77,837	124,973	40,000	233,962	
Total number of spots within the survey boundary . . . . .	No spots	33	8	115		83	
Total number of spots on Forest Service lands . . . . .	observed	33	8	115		83	
Spots per M acre of host type Forest Service lands . . . . .		.21	.102	.92		.355	
Average spot size (trees) Forest Service lands . . . . .		3.8	14.6	2.5		2.3	
Range of spot sizes (trees) Forest Service lands . . . . .		1 to 60	1 to 40	1 to 116		1 to 35	
Reds and faders/M acres host type on Forest Service lands . . . . .		.38	1.08	2.29		.924	
2. Results compiled from data collected during the ground and aerial phases of the evaluation:							
Date of ground phase . . . . .	July 1977	July 1977	July 1977	July 1977	July 1977	Sept. 1977	
Infested trees per M acre of host type Forest Service lands . . . . .	No spots	.38	1.08	2.29	None	.924	
Total number of infested trees on Forest Service lands . . . . .	observed	59.1	84.8	286.84		216.2	
Total volume of infested trees on Forest Service lands . . . . .		8.6 MBF	12.3 MBF	37.3 MBF		30.27 MBF	
Total number of affected trees on Forest Service lands . . . . .		126.1	277.8	363.52		332.0	
Total volume of affected trees on Forest Service lands . . . . .		18.4 MBF	40.0 MBF	47.3 MBF		46.5 MBF	
Ratio of green infested to total red and fading trees . . . . .		1:2.75	1:5.0	1:2.01		1:1.58	

Volume - BF - based on Scribner decimal C log rule. Cords converted to bd. ft. based on 500 bd. ft. per cord.

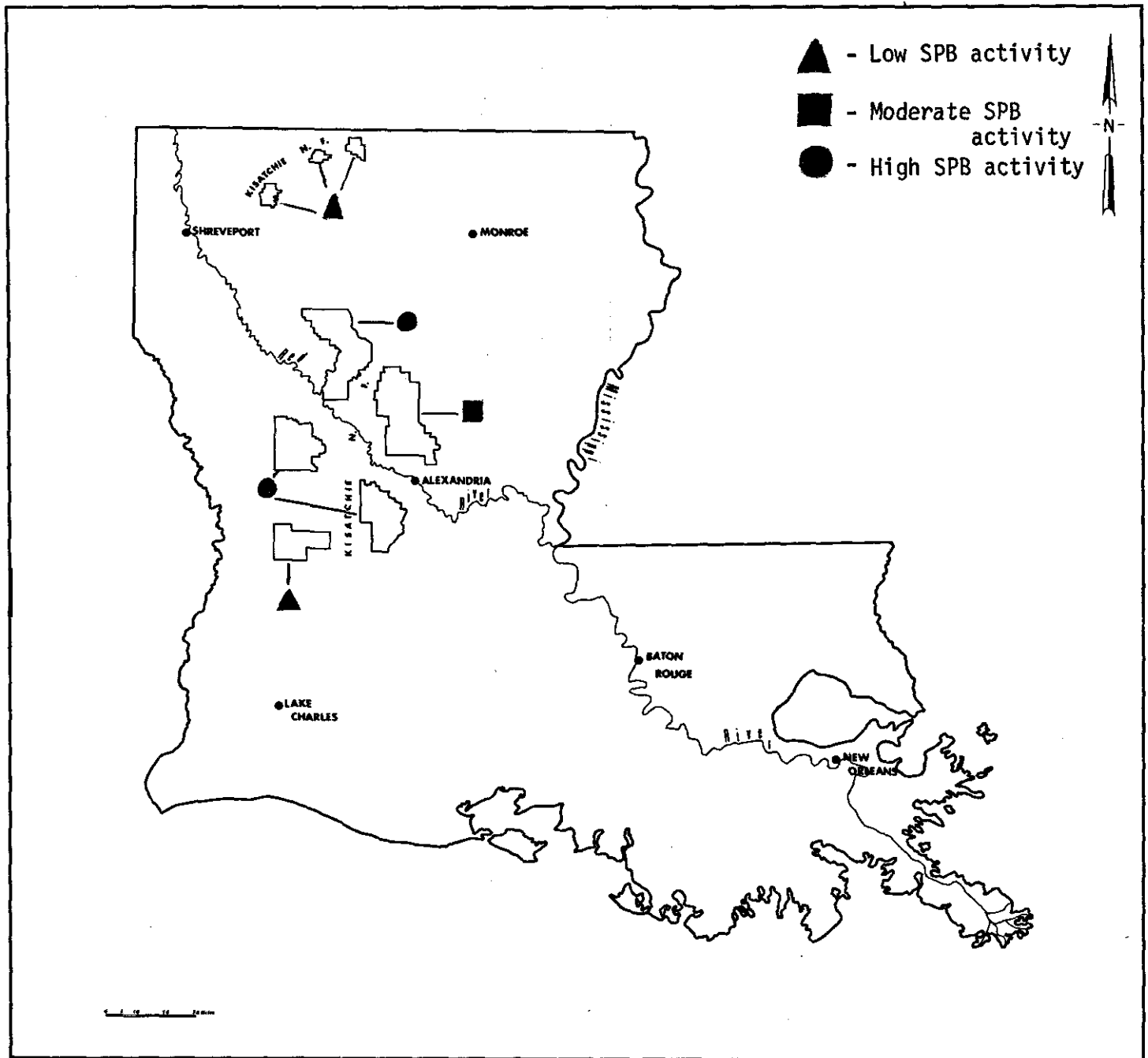


Figure 1.--Location of evaluated areas, showing districts with high, moderate, and low beetle activity, Kisatchie National Forest, Louisiana, July 1976.

The stands on this district are well maintained -- most have basal areas below 120. Salvage operations are carried out quickly when spots are discovered. There is presently a low population of SPB on this district. Appropriate thinning and quick removal of infested timber will continue to keep the damage at a minimum on this district. This is not a district where major pest control effort is needed at this time.

Catahoula District - The Catahoula District had 33 active spots. The total volume affected was 18.4 MBF. Compartments 44, 67, 90, and 95 have the greatest potential for future problems. These compartments are supporting moderate SPB populations near streams and in bottomlands. Other SPB spots on the district appear to be randomly distributed.

There are a number of stands on the district which can be described as high hazard areas for the SPB. Many stands on this district have basal areas greater than 120. A majority of these areas are susceptible to water stress during winter and spring months. It can, therefore, be anticipated that SPB activity on this district will continue due to high basal areas present (Hedden, 1976), and the large amount of pine timber found in areas susceptible to flooding. (Lorio and Sommers, 1977)

This district has salvaged 457.62 MBF from June 1, 1977 through October 1, 1977. The district salvaged 202 MBF in September. This does not correlate well with the volume that was found to be affected by FI&DM (202 MBF salvaged vs. 18.4 MBF). This is due to the district having timber operators that fly the district regularly to find and salvage SPB spots. These spots are salvaged quickly, and as a result, few spots were available for ground checking. This could be one reason the affected volume was found to be low when compared to salvage figures for other months during the summer. The spots were not growing in size, but evidence of emergence on the affected trees indicated that dispersal and proliferation could be taking place. This dispersal, given the added effects of stress and high basal areas present, is conducive to further SPB activity on this district. This district will probably need to salvage .75 to 1.50 million board feet in FY 1978.

Evangeline District - There were 8 spots on the Evangeline District. The total volume affected was 40 MBF. Compartments 32, 39, 40, and 365 have potential for future problems. The spots in these compartments are in areas that have water stress due to periodic flooding by small streams. Other spots on the district appear to be randomly distributed.

Southern pine beetle infestations on this district exhibited signs that indicate dispersal and proliferation. The spots were not

increasing in size. Most trees examined were found to have no brood present. Adults had emerged but did not enlarge the spot. Salvage figures for June through September 1977 show 248.36 MBF being salvaged. This figure correlates with what was found during ground checking (September values only). Further SPB activity is expected on the district, and the amount of salvage control needed for FY 1978 is estimated to be .5 to 1 million board feet.

Kisatchie District - The heaviest damage within the Kisatchie National Forest is on the Kisatchie District. There were 115 spots on this district, with an affected volume of 47.3 MBF. These spots are randomly distributed. Little spot growth is taking place at present. The only exception was one breakout that was ground checked in an area where the host was under water stress. Signs of emergence which indicate dispersal are characteristically found in the spots on this district.

This district has been monitored since May 1977 by personnel from the Pineville Office of FI&DM. This monitoring was done as a part of a cut-and-leave study (Hertel, unpub.). Activity has been observed to be static. The spots were about the same in number and size for each month where observation took place.

The district salvaged 220.0 MBF from June through September 1977. The need for salvage control should continue in FY 1978 due to a large population of SPB on the district, large susceptible host type, and the presence of host type that is stressed due to either high basal areas or water stress. (Lorio and Sommers, 1977)

This district is removing pines from bottomlands that are subject to periodic flooding (Kisatchie Unit Plan). They should salvage 1.5-2.5 million board feet in FY 78.

Vernon District - The Vernon District was monitored for the cut-and-leave study in the same manner as the Kisatchie District. There was presently one active spot on the district. SPB activity has been at a low level all summer with few spots being observed. This is not a district that will require an extensive SPB control effort in FY 78.

Winn District - There were 83 spots on the Winn District, with an affected volume of 46.5 MBF. Most of these spots are small, and are located in stream bottoms. The spots appear to be randomly distributed over the district with no one area being a priority control area. Activity has remained static over the summer months with 332.0 MBF being salvaged in the control effort. SPB activity is expected to continue on this district due to the large number of brood trees found in the bottoms and the abundance of over-stocked stands. This district will need to salvage 1-1.5 million board feet in FY 1978.

## RECOMMENDATIONS

### Caney District -

No SPB control project is recommended for this district in FY 78. There is a low SPB population at present, and this population is not expected to present problems due to the well-maintained stands found on the district. The district should keep the Supervisor's Office informed of any increase in SPB activity. Forest Insect and Disease Management will fly periodic detection flights.

### Catahoula District -

A SPB control project is recommended on this district. Many stands on this district with high basal areas and water stress conditions are susceptible to SPB attack. High SPB populations are being maintained by trees in bottomland areas. These trees should be on the priority list for salvage removal. Thinning of overstocked stands and removal of pines from water stress areas are two silvicultural treatments to be considered. Compartments designated as problem areas should also be examined to determine the silvicultural needs of the stands so as to lessen SPB impact on these areas.

### Evangeline District -

This district has water stress problems with the pine stands found on flood-prone sites. Compartments 32, 39, 40, and 365 should be given silvicultural treatment in accordance with the Unit Plan to reduce susceptibility of these stands to SPB attack. Thinning of overstocked stands and removal of pines from bottomlands are two actions to be considered. A control project is recommended for this district. A high potential exists for further damage due to the high population of the SPB on the district and the presence of overstocked and/or water stressed stands.

### Kisatchie District -

A control project is recommended for this district. High SPB populations have remained in a static condition on this district all summer. A high potential exists for further outbreak due to this large SPB population. Removal of pines found in bottoms as per Unit Plan will be an aid in reducing the damage from SPB attack.

### Vernon District -

A SPB control project is not recommended for the Vernon District due to the small amount of damage sustained over the summer months

and the low population of SPB on the district at this time. The district should keep the Supervisor's Office informed of any increase in SPB activity. Forest Insect and Disease Management will fly periodic detection flights for the district.

Winn District -

A control project is recommended for the Winn District. This project should set, as one of its goals, the removal of the brood trees found in flood-prone bottomland areas. Preventative treatment in the form of intermediate cuts is recommended as an effort to prevent SPB outbreaks in overstocked stands.

All salvage, chemical treatment, or piling and burning should be done in accordance with FSM 5250. Entomologists with FI&DM are available for consultation should SPB activity increase on a district unexpectedly.

BIBLIOGRAPHY

- Hedden, R. L. 1976. Southern pine beetle spot growth and inactivity in east Texas. (Unpubl.)
- Kisatchie Unit Plan FY 78-86. USFS, USDA. (In draft)
- Lorio, Peter L., and Robert A. Sommers. 1977. Soil and Stand Factors Associated with SPB Infestations in the Louisiana Upper Coastal Plain. (Unpubl., 9 p.)

POST SUPPRESSION EVALUATION  
OF THE  
KISATCHIE NATIONAL FOREST

by

James D. Smith<sup>1/</sup>

INTRODUCTION

The purpose of this evaluation is to help the forest and districts with southern pine beetle suppression projects evaluate their FY 77 project. It is an attempt to summarize reported accomplishment and to document the successes and problems encountered by the districts while doing SPB suppression work. It is hoped that by reviewing past projects, better decisions can be made concerning project planning, organizing, directing, and controlling. This may also help in future target setting, fund allocation, and accomplishment reporting.

The Kisatchie National Forest had a Southern Pine Beetle Suppression Project in FY 77.

Project cost was based on an estimated need to salvage 5,000 MBF for SPB control. Also, it was estimated that 4,000 trees would need to be chemically treated to effect SPB control. To do this, pre-suppression flights covering 7,140,000 acres were planned. The total estimated cost for this project was \$84,794. The funding was received by Kisatchie National Forest in February 1977, (5200-10 dated 10-18-76).

A supplemental project was added in August 1977. An additional 472 MBF of timber was targeted for SPB salvage/control. Additionally, 520 stems were to be chemically treated. The cost of the supplemental project was \$7,000. Table 1 contains a comparison of SPB Project target figures versus reported accomplishments.

Target Setting and Insect & Disease Management Reporting System (IDARS) -

A Project Proposal (5200-10 and related documents) was submitted for each Forest where the SPB was expected to cause unacceptable loss. Salvage control (MBF), chemical control (stems), and presuppression (acres) targets were set up based on current entomological knowledge. Although some estimates can be made, SPB activity cannot be accurately predicted a year in advance. For this reason, the estimated targets may not reflect what actually happened on a forest during the project year.

---

<sup>1/</sup> Entomologist, USFS, SA, S&PF, Forest Insect and Disease Management, Group, Pineville, LA 71360.



Table 1. Project accomplishments as reported on IDARS

Target Areas	Caney	Catahoula	Evangeline	Kisatchie	Vernon	Winn
Stems chemically treated	-	-	-	760	-	-
Presuppression acres	255 M	2,124 M	None	1,195.9 M <sup>1/</sup>	132 M <sup>1/</sup>	98.4 M
Salvage MBF	138	2,256	976.69	2,333.50	1,000	925.50
Funds spent	2,445.00	4,063.00	6,090.00	20,000.00	2,599.00	11,996.0
Totals:						
Project targets			Data as reported on IDARS			
Funding available \$ 68,900 <sup>2/</sup>			\$ 47,194.00			
Salvage 5,472 MBF			7,269 MBF			
Chemical treated 4,520 Stems			760 Stems			
Presuppression acres 7,140,000			4,690,908 (41 flights)			

<sup>1/</sup> These districts flown by FI&DM as part of cut-and-leave study during the summer FY 77.

<sup>2/</sup> Funds available to District after administrative funding for Supervisor's Office subtracted. Total project was \$91,794.

The project took into account funding for presuppression flights, chemical control, salvage control, and indirect services of the Supervisor's Office. When the reported accomplishment figures do not match the targets set forth in the Project, it may be due to a change in SPB activity over the course of the year, to inconsistencies in accomplishment reporting, or to districts not able to get the work done. Some reasons for not accomplishing the work include inoperability, poor markets, few operators, late funding and district commitment to do the work.

Project accomplishment is reported on IDARS. These forms are designed to show how SPB control work is being accomplished on a monthly basis. If accomplishment reporting problems become apparent, FI&DM should give adequate training to insure that districts know how to report project accomplishment correctly.

#### Funding -

The Kisatchie National Forest was one of the first Region 8 Forests to be funded. Timely funding was conducive to prompt SPB control action.

#### Weather -

The winter was colder than normal and the following summer hot and dry. The effect on SPB population was not determinable.

#### Market Conditions -

Market conditions in Louisiana during FY 77 were good. There was no problem in selling pulpwood affected by SPB. Timber prices ranged from \$7 - \$10 a cord for pulp (green) to \$110-\$168 per MBF for sawtimber (green). The infested sawtimber was sold at an average of \$40 per MBF.

#### Operator Reliability -

Caney - This district has private operators that fly the district on their own. These flights supplement the regular district flights and add efficiency to SPB control work. Infested timber is usually removed within a week. Few breakouts occur due to promptness in salvage and effectiveness of salvage control by the operator.

Catahoula - This district also has private operators that fly the district in search of SPB spots. Spots are salvaged quickly. Breakouts are not a problem on this district. Operators on this district are aggressive and efficient in SPB control work. The overall assessment of operator reliability is excellent.

Kisatchie - Most salvage operations are successful. This district has reported problems related to operator reliability. Breakouts have been the result of poor salvage operations. The district disqualifies unreliable operators from future contracts when the results of the control operation are unsatisfactory. Prompt action by district personnel to correct or disqualify operators doing unsatisfactory work will correct this situation. Operators' quality of work on this district is generally satisfactory.

Evangeline - This district has only three regular operators. Each is knowledgeable of SPB control work, and the results of control operations are usually satisfactory. The only problem would be that in an epidemic situation, there would not be enough knowledgeable operators to do a complete job.

Vernon - Salvage control operations on this district are usually successful. This district was monitored during the summer of 1977 for the cut-and-leave pilot study. No breakouts were observed during this time. The control effort by the operators here is satisfactory.

Winn - The Winn District has several operators that bid on SPB control sales. These operators are reliable and the overall control effort on this district is satisfactory.

#### Personnel -

All of the districts take on temporary personnel only when large chemical control efforts are planned. These people help to make up the chemical control crews. At this time, there are no temporary people employed. Under present conditions, District personnel have been able to complete most control work as needed. Chemical control was not emphasized in FY 77.

#### Unit Plans -

Kisatchie - The Kisatchie District Unit Plan addresses the need to reduce brood trees in bottoms. Removal of these trees has been initiated. Several years will be needed to complete this task.

All of the other districts still have problems with pine in bottom-land acres subject to water stress. Priority removal of these trees will help to prevent SPB outbreaks. Insect and disease management is a long-term proposition which must be addressed when long-range plans are formulated. FI&DM is available to assist the Planning Team as new Unit Plans and Timber Management Plans are written.

Timber Sales -

Most of the spots salvaged were small, being less than \$2,000 sales. These spots were usually salvaged within 8 - 10 days when District personnel did the flying, scouting, marking, and other administrative work. When private operators assist in the flying and scouting, salvage time could be cut in half.

Conclusion -

Overall salvage control operations related to the FY 77 SPB project on Kisatchie National Forest have been satisfactory. Chemical control was integrated with salvage control, but was not as necessary as projected in the project targets. The fact that some private operators are willing to fly and scout SPB spots reduced the time to salvage significantly. District personnel then only have to mark the timber and administer the sale. This is true on the Caney, Kisatchie, and Catahoula Districts.

The IDARS reporting form is used to provide data concerning the project. Accurate reporting is necessary in order to keep abreast of what is actually happening on each project district. FI&DM will give training sessions as needed to insure that the people responsible for reporting on the IDARS form understand the IDARS system. This will also help to minimize errors on future reports.

As Unit Plans are formulated, FI&DM is available to assist in planning for long term insect and disease management. This planning is essential for the implementation of preventative measures. It is also desirable when direct control of Forest pests must be considered for a sensitive area (campground, etc.).

It should be noted here that the success of a SPB control effort depends on the post suppression check. Districts which make the effort to do this properly greatly increase the efficiency of their work.